

WAMBO COAL PTY LIMITED

**MONTHLY ENVIRONMENTAL MONITORING
REPORT**

April 2013

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1.0 Introduction

This report presents environmental monitoring results for the reporting period **Monday 1 to Tuesday 30 April 2013**. Monitoring during this period includes meteorological measurement, surface and ground water sampling, depositional dust sampling, High Volume Air Sampling, blasting events and PM10 real time air monitoring results. Real time noise monitoring results are reported in a quarterly format and can be found on the Peabody Wambo website at:

<http://www.peabodyenergy.com/content/404/Australia-Mining-New/New-South-Wales/Wambo-Mine>

2.0 Meteorological Data

Results for reporting period are available in **Appendix A**.

3.0 Surface Water Sampling

Surface water samples are collected in accordance with **AS/NZS 5667.4:1998 – *Guidance on sampling from lakes, natural and man-made*** and **AS/NZS 5667.6:1998 – *Guidance on sampling of rivers and streams***. All samples collected were analysed in the field for **pH**, electrical conductivity (**EC**) and temperature. Selected sites were analysed in a **NATA*** accredited laboratory for total suspended solids (**TSS**) and total dissolved solids (**TDS**).

*National Association of Testing Authorities - **NATA** is the authority that provides independent assurance of technical competence.

Wambo Surface water monitoring criteria was met at all sample sites during the reporting period.

Table 1: Monthly Surface Water Results – April 2013

Sample Location	pH	EC (µS/cm)	TSS (mg/L)	TDS (mg/L)	Oil & Grease (mg/L)	Temp (°C)	Comments
WOLLOMBI BROOK							
SW01 - Wollombi Brook Up	8.00	502	3	246			
SW03 - Wollombi Brook Pump Out	7.90	518	5	255			
SW02 - Wollombi Brook Down	7.90	555	2	264			
SW40 - Confluence with SWC	7.90	519	3	254			
NORTH WAMBO CREEK							
SW04 - North Wambo Creek Up	-	-	-	-	-	-	Creek dry
SW27 - North Wambo Creek Middle Lower	-	-	-	-	-	-	Creek dry
SW32 - North Wambo Creek Pump	-	-	-	-	-	-	Creek dry
SW05 - North Wambo Creek Down	7.60	2,480	2	1,390			
SOUTH WAMBO/STONY CREEKS							
SW06 - South Wambo Creek	7.60	522	<1	209			
SW07 - South Wambo/Stony Creek	7.90	627	<1	270			
SW08 - Stony Creek	7.30	425	<1	203			
LONGFORD/DOCTOR'S CREEKS							
SW43 - Longford Creek Up	7.80	380	12	247	<2		
SW44 – Longford Creek Down	7.80	474	4	290	<2		
SW46 - Doctors Creek Up	8.50	1,502	6	810	<2		
SW45 – Doctors Creek Down	8.40	1,495	7	815	<2		
WATERFALL CREEK							
SW39 – Waterfall Creek Midstream	-	-	-	-	-	-	Creek dry
MINE WATER DAMS							
SW11 - West Cut Dam Pipe	Not Pumping						
SW12 - West Cut Dam	8.60	5,080	-	-	-	-	-
SW14 - Box Cut Dam (Admin)	9.10	874	-	-	-	-	-
SW15 - Eagles Nest Dam	9.00	5,160	31	3,210	-	-	-
SW20 - Dam Adjacent to West Cut Dam	8.50	4,550	-	-	-	-	-
SW29 - SCB Dam	7.80	1,374	-	-	-	-	-
SW30 - Turkeys Nest	9.00	6,680	-	-	-	-	-
SW31 - Gordon Below Franklin	8.90	4,810	-	-	-	-	-
SW37 - Wollemi Sump	8.50	1,356	-	-	-	-	-
SW38 - Homestead Open Cut	8.70	6,490	-	-	-	-	-
SW47 - NWU Pumpout Water	-	-	-	-	-	-	Dry
SW48 - Inpit sample	8.00	6,300	-	-	-	-	-
SW49 - Bates Pit Pumpout	8.50	653	-	-	-	-	-
SW51 – South Dam	9.1	5,200	-	-	-	-	-
SW50 - Hunter River Water	Not Pumping						

Note: Figures in bold are outside trigger levels.

4.0 Groundwater Sampling

Wambo groundwater monitoring criteria was met during the reporting period with the exception of sites **GW11, P109, P114, P116, P202, P206** and **P301**.

Table 2: Ground Water Results – April 2013

Sample Location	pH	EC (µS/cm)	Depth to Water (m)	Temp (°C)	Comments
GW02	7.30	534	4.69	21.5	
GW11	7.40	526	3.73	20.3	
P106	7.20	507	6.73	21.2	
P109	7.40	1,164	4.28	19.2	
P110	7.10	741	4.33	19.8	
P111	7.20	614	5.60	18.5	
P114	6.70	5,790	5.32	19.6	
P116	7.10	707	4.78	21.0	
P202	7.90	5,520	7.99	19.6	
P206	7.40	2,160	15.01	19.2	
P301	6.90	3,700	19.40	14.6	
P311	-	-	-	-	Collapsed
P315	7.40	381	4.91	21.7	
GW12	6.80	21,300	9.82	20.7	
GW13	7.00	3,580	5.00	20.9	
GW14	-	-	-	-	Dry
GW15	7.00	626	10.41	19.9	
GW16	7.70	481	4.52	19.0	
GW17	7.20	4,610	6.90	19.3	
GW18	-	-	-	-	Dry
GW19	-	-	-	-	Dry
GW20	GW20 is a vibration wire multi-piezometer installation				
GW21	-	-	-	-	Dry
GW22	8.30	6,730	35.98	20.9	
P1	*	*	*	*	-
P3	*	*	*	*	-
P5	*	*	*	*	-
P6	*	*	*	*	-
P11	*	*	*	*	-
P12	*	*	*	*	-
P13	*	*	*	*	-
P15	*	*	*	*	-
P16	*	*	*	*	-
P17	*	*	*	*	-
P18	*	*	*	*	-
P20	*	*	*	*	-

Note: all depths measured to top of casing, except United bores which are to ground. Figures in bold are outside trigger levels listed in Table 5 of the Ground Water Monitoring Programme (GWMP), which is part of the Site Water Management Plan.

* Represents data that is provided on a quarterly basis. The results are to be updated once available.

5.0 Depositional Dust Sampling

Sixteen (Table 3) depositional dust gauges were collected for the reporting period. Sampling and analysis is conducted in accordance with AS 3580.10.1 – 1991 – *Determination of particulates – Deposited matter – Gravimetric method*. All gauges were analysed for insoluble solids (IS) and ash residue (AS). Field observations include water quantity and quality, and any visible contaminants in the sample.

Table 3: Dust Deposition Results – April 2013

Site	Insoluble Solids (IS) (g/m ² .month)	Ash Residue (AR) (g/m ² .month)	IS:AR Ratio	IS YTD Average (g/m ² .month)	AR YTD Average (g/m ² .month)
D01	11.8	8.5	72	9.2	4.5
D03	2.9	2.1	72	3.4	2.3
D07	7.5	5.0	67	6.2	3.4
D09	4.2	2.1	50	6.2	3.2
# D11	4.1	2.1	51	2.9	2.0
# D12	2.2	1.7	77	3.9	2.8
D14	-	-	-	-	-
# D17	1.5	1.1	73	3.3	1.6
D19	3.2	2.1	66	3.7	2.6
D20	1.1	0.8	73	1.9	1.3
# D21	4.40	4.10	93	2.4	1.9
# D22	1.9	1.3	68	2.2	1.6
D23	1.9	1.1	58	1.8	1.2
# D24	1.3	0.8	62	1.2	0.9
# D25	2.7	1.7	63	2.7	2.0
D26	1.1	0.6	55	1.7	1.1

Note: Results in **bold** are YTD average above 4g/m²/month
Results # are dust gauges not on WCPL owned land. DD gauges on Wambo Coal land and above criteria level are not considered non-compliance.

Dust gauges **D01, D07 and D09** all showed IS YTD averages above the g/m².month. Contamination from Insects and bird droppings may have influenced these results. As these sites are all located within the Wambo Coal boundary, they are not considered to be non-compliant.

6.0 High Volume Air Sampling

Four high volume air sampler (HVAS) operated at locations surrounding Wambo during the reporting period (Table 4). All units sampled Total Suspended Particulates (TSP) over a 24-hour period on a six day cycle, in accordance with AS 2724.3 – 1984 – *Determination of total suspended particulates (TSP) – High volume sampler gravimetric method*.

Table 4: HVAS Results – April 2013

Date of Run	HV01 - Coralie TSP ($\mu\text{g}/\text{m}^3$)	HV02 - Caban TSP ($\mu\text{g}/\text{m}^3$)	HV03 - Thelander TSP ($\mu\text{g}/\text{m}^3$)	HV04 - Muller TSP ($\mu\text{g}/\text{m}^3$)
03/04/13	28.4	18	17.6	23.5
09/04/13	57.2	39	35.2	37.9
15/04/13	70.3	82	45.2	48.7
21/04/13	34.3	28	17.7	40.2
27/04/13	77	64	26.2	31.3
Monthly Mean	53	46	28	36
Yearly Mean	74	66	50	66

Wambo did not exceed the project criteria for the reporting period with all **annual averages** below **90 $\mu\text{g}/\text{m}^3$** .

7.0 Blast Events

Four monitoring sites measure ground vibration and air blast overpressure for blasts conducted at Wambo. Two blasts were conducted during the reporting period. Monitoring at all four sites is conducted under the blast monitoring requirements set out in the **Wambo EPA licence (EPL 529) and DA 305-7-2003**.

All blasts conducted during the period were within development consent and EPL limits of **120 dB** (linear peak) for overpressure and **10 mm/s** for vibration.

Wambo continues to comply with the EPL condition that 95 per cent of all blasts (in a reporting year) shall have overpressure results less than 115dB (linear peak) and ground vibration results less than 5 mm/s.

Table 5: Blast Results – April 2013

Blast Number	Date	Time	Identification	Homestead (BM01)		Kelly (BM02)		Muller (BM05)		Harris (BM03)	
				Overpressure dB(L)	Vibration (mm/sec)	Overpressure dB(L)	Vibration (mm/sec)	Overpressure dB(L)	Vibration (mm/sec)	Overpressure dB(L)	Vibration (mm/sec)
1	17/04/13	15:29	M13WRC1	<111.0	<0.22	92.9	0.05	104.7	0.14	96.4	0.05
2	24/04/13	11:15	M3WTA1	106.5	0.13	101.8	0.14	91.4	0.24	97.2	0.07

8.0 Real-Time Air Quality Monitoring

Four real time Tapered Element Oscillating Microbalance (**TEOM**) units were in operation during the reporting period. The sites are located at Coralie (**PM01**), the Caban residence (**PM02**), Thelander residence (**PM03**) and the Muller residence (**PM04**). These units measure particulate matter less than 10 microns in diameter (**PM₁₀**) on a continuous basis and provide a 24 hour average result. These units operated and sampled in accordance with **AS 3580.9.8 - 2002, Method for Sampling and Analysis of Ambient Air - Determination of Suspended Particulate Matter - PM₁₀ Continuous Direct Mass Method using a Tapered Element Oscillating Microbalance Analyser.**

The year to date average results at all **PM10** sites were below the guideline for annual average **24hr period (30ug/m³)**. The results exceeding PM10 24 hour criteria (**30ug/m³**) were caused by regional hazard reduction burning.

Table 6 PM10 Results – April 2013

Date of Run	AQ01 (Coralie)		AQ02 (Wambo Road)		AQ03 (Thelander)		AQ04 (Muller)	
	PM10 24 Hour Result (ug/m ³)	YTD Average	PM10 24 Hour Result (ug/m ³)	YTD Average	PM10 24 Hour Result (ug/m ³)	YTD Average	PM10 24 Hour Result (ug/m ³)	YTD Average
01/04/13	18.2	23.29	15.6	23.80	-	-	12.9	20.31
02/04/13	14.9	23.26	20.4	23.79	15.1	19.45	11.8	20.28
03/04/13	14.4	23.23	13.2	23.75	-	-	14.7	20.26
04/04/13	10.1	23.18	10.8	23.70	14.0	19.43	9.8	20.22
05/04/13	13.6	23.14	12.5	23.66	13.0	19.41	12.2	20.19
06/04/13	11.1	23.10	9.4	23.61	16.7	19.40	9.7	20.16
07/04/13	11.9	23.06	13.3	23.57	11.8	19.37	9.4	20.12
08/04/13	17.1	23.04	17.6	23.55	12.6	19.34	12.1	20.09
09/04/13	17.9	23.02	17.9	23.53	-	-	12.3	20.06
10/04/13	13.4	22.99	11.7	23.49	14.6	19.33	11.1	20.03
11/04/13	22.4	22.99	15.9	23.46	17.0	19.32	18.2	20.02
12/04/13	22.1	22.98	13.9	23.43	15.4	19.30	19.6	20.02
13/04/13	24.0	22.99	39.9	23.49	19.5	19.31	17.7	20.01
14/04/13	18.6	22.97	34.9	23.53	22.0	19.32	18.8	20.01
15/04/13	25.1	22.98	39.0	23.58	26.0	19.34	20.1	20.01
16/04/13	11.7	22.94	11.0	23.54	10.9	19.31	14.2	19.99
17/04/13	14.1	22.91	14.6	23.51	14.9	19.29	15.7	19.97
18/04/13	16.4	22.89	28.5	23.52	17.4	19.29	18.5	19.97
19/04/13	11.6	22.85	23.5	23.52	9.0	19.25	10.3	19.93
20/04/13	8.9	22.80	9.7	23.48	8.8	19.21	8.8	19.90
21/04/13	10.9	22.76	9.4	23.43	9.2	19.18	11.8	19.87
22/04/13	14.4	22.73	13.0	23.39	9.4	19.14	11.1	19.84
23/04/13	11.7	22.69	16.6	23.37	12.5	19.12	9.4	19.80
24/04/13	15.7	22.67	19.2	23.36	13.9	19.10	13.0	19.78
25/04/13	21.2	22.66	24.1	23.36	16.0	19.09	13.9	19.76
26/04/13	15.7	22.64	20.8	23.35	14.4	19.08	11.5	19.73
27/04/13	22.0	22.64	26.0	23.36	20.7	19.08	17.2	19.72
28/04/13	30.4	22.66	49.5	23.45	32.1	19.13	28.9	19.75
29/04/13	65.0	22.80	96.6	23.69	71.0	19.30	65.4	19.91
30/04/13	34.3	22.84	37.2	23.73	30.7	19.34	33.5	19.95

Note: Results in **red** are greater than the 24hr period guidelines of 50ug/m³
 Results in **red** are greater than the annual average **24hr period** guidelines of 30ug/m³
 Results in **bold** are between 30ug/m³ and 50ug/m³
 - No values recorded due to equipment error.

Appendix A
Wambo Weather Station
Meteorological Data

Meteorological Data April 2013

Date	Temp (2m)			Temp (10m)			Temp Inversion			Humidity			Solar Radiation			Rain mm	Wind Speed		
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max		Min	Avg	Max
1/04/13	13.2	19.2	25.5	14.4	19.8	25.1	-4.1	7.7	21.8	48.2	75.0	95.3	-1.5	170.8	867.3	0.0	0.0	1.0	3.1
2/04/13	10.9	19.3	27.7	12.2	20.0	27.8	-9.4	8.9	25.4	31.4	69.2	97.4	-1.6	225.8	789.3	0.0	0.0	1.1	4.2
3/04/13	14.3	17.8	22.5	15.7	18.3	22.2	-6.3	6.0	20.7	63.2	81.6	92.8	-1.5	118.3	713.0	0.0	0.0	1.9	4.9
4/04/13	15.2	17.3	21.1	16.0	17.8	20.7	-4.6	5.6	11.9	69.8	84.7	93.3	-1.5	83.3	556.6	2.5	0.0	1.9	3.8
5/04/13	13.6	18.2	23.7	15.0	18.9	23.6	-4.4	8.3	20.1	47.3	75.9	96.1	-1.6	161.5	819.4	0.2	0.0	1.9	6.5
6/04/13	11.5	17.3	23.7	12.3	17.9	23.7	-3.2	6.7	18.9	48.5	80.2	96.6	-1.6	300.7	482.5	0.0	0.0	1.3	5.1
7/04/13	10.7	16.8	24.1	11.6	17.5	24.1	-6.9	8.3	25.0	50.7	84.4	97.8	153.8	347.4	476.9	6.2	0.0	0.7	3.0
8/04/13	10.1	16.9	25.0	11.2	17.7	25.1	-4.8	9.8	23.4	40.0	80.9	98.1	158.1	345.1	480.3	0.4	0.0	1.0	4.7
9/04/13	12.1	17.4	24.1	13.3	18.1	24.0	-3.8	8.2	20.8	50.7	81.3	97.3	136.0	342.8	469.2	0.0	0.0	1.3	4.8
10/04/13	10.9	17.6	24.8	11.9	18.3	24.7	-3.6	9.3	24.7	47.9	79.0	97.8	135.1	338.2	468.9	0.0	0.0	1.4	4.0
11/04/13	9.5	17.4	26.5	10.4	18.3	26.5	-9.4	10.9	32.1	33.1	73.3	97.7	162.1	342.8	467.2	0.0	0.0	1.0	3.6
12/04/13	11.0	18.3	25.9	12.5	19.1	25.7	-3.1	10.2	27.1	45.0	76.0	96.8	81.0	322.9	438.6	0.0	0.0	1.5	4.4
13/04/13	11.0	17.9	26.0	12.2	18.9	26.0	-2.2	12.7	29.5	38.7	76.6	97.2	18.6	333.7	461.8	0.0	0.0	0.7	1.7
14/04/13	10.2	18.3	28.7	11.2	19.3	28.8	-6.7	12.3	32.2	32.2	72.1	97.6	69.3	335.7	442.5	0.0	0.0	0.8	3.2
15/04/13	10.2	19.5	30.8	11.3	20.3	30.9	-6.3	9.6	34.3	25.5	68.3	96.8	109.7	342.9	455.0	1.6	0.0	1.1	4.9
16/04/13	15.8	18.5	22.1	17.4	19.1	21.9	-3.7	8.1	21.2	61.9	82.2	94.5	137.5	350.4	443.5	3.0	0.0	1.6	3.9
17/04/13	13.9	18.3	23.7	15.4	19.0	23.7	-2.9	9.5	23.8	51.6	76.5	94.2	148.1	342.5	466.5	0.0	0.0	1.2	3.2
18/04/13	11.4	17.6	25.5	12.6	18.3	25.4	-10.8	9.2	25.8	43.7	78.8	97.6	163.8	346.0	468.6	0.0	0.0	1.2	3.8
19/04/13	10.3	14.5	20.0	12.2	15.7	19.7	-5.5	15.7	48.1	39.3	71.8	97.2	110.7	336.8	464.6	0.0	0.0	1.6	5.6
20/04/13	9.1	14.3	16.5	13.3	15.2	16.8	1.4	10.9	57.4	54.7	78.2	93.1	77.7	343.3	450.5	7.2	0.1	1.8	4.3
21/04/13	8.7	14.6	20.9	9.8	15.3	20.7	-4.8	8.8	26.6	46.5	75.8	96.4	80.7	339.3	455.9	0.0	0.0	1.0	2.8
22/04/13	10.2	16.8	25.5	12.9	17.7	25.8	-3.9	10.5	39.5	29.3	67.3	94.6	118.0	337.5	447.7	0.0	0.0	1.7	5.4
23/04/13	6.3	15.4	25.0	8.1	16.5	24.8	-6.3	14.4	43.5	34.1	68.1	97.3	132.9	337.2	463.8	0.0	0.0	1.5	4.7
24/04/13	6.2	14.3	23.9	7.5	15.4	23.9	-7.3	13.3	34.9	29.2	69.5	97.1	132.4	339.5	457.5	0.0	0.0	1.4	4.7
25/04/13	6.0	13.7	23.7	7.9	14.7	23.7	-5.9	13.6	33.1	32.4	70.5	96.5	122.7	345.1	470.3	0.0	0.0	0.9	2.5
26/04/13	5.2	14.5	26.5	7.0	15.8	26.4	-6.1	16.7	41.3	26.1	66.6	96.7	84.9	343.9	471.8	0.0	0.0	1.4	4.2
27/04/13	5.2	14.7	27.7	6.3	15.8	27.6	-4.8	13.3	35.1	26.9	71.4	97.0	83.7	342.7	463.6	0.0	0.0	0.7	2.0
28/04/13	6.3	16.1	28.9	8.1	17.4	29.1	-3.0	16.5	54.0	21.9	64.8	97.0	21.4	337.6	454.5	0.0	0.0	1.8	5.8
29/04/13	6.4	16.7	29.5	7.8	17.8	29.8	-4.3	14.0	29.6	21.3	64.8	95.7	66.8	342.4	471.6	0.0	0.0	1.0	3.3
30/04/13	11.8	18.7	25.4	12.7	19.6	25.3	-2.3	10.5	36.0	51.5	79.8	95.9	72.9	326.5	443.0	0.0	0.0	1.4	3.6
Month	5.2	16.9	30.8	6.3	17.8	30.9	-10.8	10.6	57.4	21.3	74.8	98.1	-1.6	307.4	867.3	21.0	0.0	1.3	6.5